

# FURTHER NOTES ON A NEW CLASSIFICATION OF AUSTRALIAN ROBBERFLIES (DIPTERA-ASILIDAE).

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For loan of, or access to material that aided in the formation of this outline on a proposed new classification of Australian Asilidae, I would again express my indebtedness to the Directors and Curators of Museums and to various entomologists all of whom have been enumerated in an earlier paper (Hardy, 1926, p. 306); for the loan of further material to Mr. Alan Dodd, chief of the staff engaged upon the biological control of prickly pear, and to his co-workers Messrs. A. R. Taylor, G. R. Bassingthwaighte and T. A. Cole, who have submitted for identification genera and species I have not seen represented in other collections. Those new species from Chinchilla, Queensland, often labelled "Chilla" in handwriting, are liable to lead to errors if they ever find their way into collections abroad and become described from there; the corruption is too near "Chile" unless very clearly written.

My knowledge of the world's genera of Asilids and their structure is mainly based upon the few papers available to me, to Lundbeck's *Diptera Danica*, and to Melin's excellent studies on the Swedish species. The last mentioned author anticipated many of the views I was slowly evolving and so the enlightenment afforded by him gave me greater confidence than I would otherwise have had in the classification proposed. To these works I must add an acknowledgment to the value of the exotic Asilids sent by Professor M. Bezzi, consisting for the most part of genera related to the Australian forms. I have insufficient knowledge of the genus *Dasypogon* itself, therefore I have made no attempt to place it in the present work; but from what I can gather it will form the typical genus of a tribe not represented in Australia.

In 1921, I revised the characters of various genera of Australian Asilidae, and again in two papers of 1926 reconsidered some of these. These three papers marked a stage in a search for an adequate classification which is further advanced in the present paper wherein the family is treated as a whole. Three proposed tribes have already been diagnosed and these are maintained in the present paper, though a different conception is given to some of them and four more tribes are added, two of which have already been mentioned.

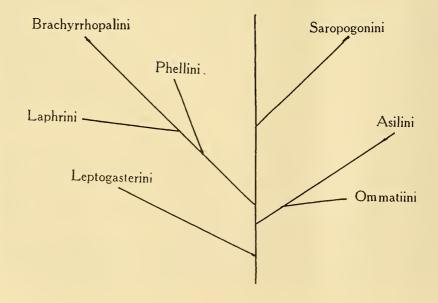
An improvement will be found in the incorporation of part of the old subfamily Laphrinae with the *Saropogonini*, two genera being thus transposed, whilst the *Cerdistus-Neoitamus* complex is more adequately isolated though very little altered in effect, the genus *Stilpnogaster* being now excluded from that complex.

Three subfamilies only are recognized, the tribe *Laphrini* being too intimately connected with *Brachyrrhopala* and *Phellus* to permit of its isolation except perhaps under quite a different conception to that understood by the old subfamily Laphrinae. *Saropogonini*, judging from Australian collections, seems to warrant subfamily rank, but this is not followed in the present paper. The subfamily Asilinae is now divisible into two tribes, *Ommatiini* and *Asilini*, whilst the typical genus of the latter, *Asilus*, is excluded from the Australian fauna.

These tribes are recognizable from the following key:-

1.	Antennae with a long hair-like arista at apex
	Antennae never with an arista, at most with a minute hair-like spine that is usually
	situated within a cavity, depression or in a notch. (Subfamily DASYPOGONINAE.) 4
2	Venation very simple, alula of wings much reduced in size; female genitalia simple
	and not formed with an ovipositor. (Subfamily LEPTOGASTERINAE.) (One tribe
	only.) Leptogasterini
	Venation with the vein R <sub>2+3</sub> joining R <sub>1</sub> before reaching the wing border, also M <sub>2</sub>
	similarly runs to M. (Subfamily ASILINAE.)
3.	Arista of antennae pectinate; female with simple genitalia, not being formed with
٠.	an ovipositor
	Arista of antennae simple; female genitalia formed with an ovipositor ASILINI
4	Female abdomen with genital spines at apex. Venation more or less simple, or
	R <sub>212</sub> runs into R <sub>1</sub> or M <sub>2</sub> runs into M <sub>4</sub> , but both sets of veins do not coalesce in the
	same species
	Female never with genital spines at apex, but if spine-like hairs occur these are
	numerous and do not take the form of strong curved spines as in the Saropogonini
5	Wings never with M <sub>3</sub> running into M <sub>4</sub> Brachyrrhopalini
9.	Wings always with M <sub>2</sub> running into M <sub>4</sub>
c	Wings never with R <sub>2+3</sub> running into R <sub>1</sub>
0.	
	Wings always with R <sub>2+3</sub> running into R <sub>1</sub> LAPHRIINI

The hypothetical genealogical relationship between these tribes is shown in the following diagram where an attempt has been made to interpret the relations



by the degree of specialization taking into account genital characters of the female, antennal structure and other outstanding characters. If the isolation of the *Saropogonini* is maintained, as illustrated in the diagram, it will be necessary to erect a subfamily name for the group.

## Subfamily Leptogasterinae.

This subfamily contains but one tribe under which the characters are dealt with. It conforms nearest to the Asilinae in antennal structure but to the *Brachyrrhopalini* in venation, only being more simple in this respect. The female genitalia are simple as far as I can see, consisting of a vent between the ninth dorsal and ventral sclerites. Lundbeck refers to a small, generally quite hidden, ovipositor, and although the ninth segment does not bear the grey tomentum of the others and hence is black, it does not seem to be specially shaped into an ovipositor in the Australian forms.

## Tribe Leptogasterini (new tribal name).

This tribe contains flies that are very slender and have a much reduced alula on the wing, thus giving the insect the pedicellated wing structure that is reminiscent of dragonflies of the suborder Zygoptera. The simple venation with all the veins running to the wing border without unduly curving, and the absence of the interradial crossvein, which is but rarely indicated by a stunted vein, the absence of pulvilli on all legs and the very long claws between which an elongate, slender empodium occurs, are consistent characters occurring on all species of the only genus yet recognized from Australia.

## Genus Leptogaster Meigen.

Under this genus Melin recorded a resting habit where the flies "swoop down on a grass-stem with the wings lying parallel in order to rest. In doing so they usually catch hold of the stem with the tarsi and hang down with the abdomen at an angle of 45° to the stem (Fig. 14)". He then quotes Lundbeck: "When sitting the hind legs are generally stretched forward so that all six tarsi are placed near each other", adding his own remark, "I have never seen this, on the contrary, the flies sat as shown in the figure with the back tarsi widely separated from the anterior pair". It so happens with the Australian species the temporary resting position on an upright stem of grass is always as Melin reports, but they are liable to rest at the extreme apex of a horizontal twig, the body held in a direct line with the twig which the head almost touches, and are usually sluggish or in a state of coma when so found. The best time to observe this is in the early morning and late afternoon, although they may be so found at any hour of the day. Further it should be noted that the elongate hind legs are quite near the anterior pair, being placed on the twig just anteriorly to them. It will be readily realized that the fly in such a position looks so like a part of the twig on which it rests, that the attitude may be taken as a case of protective mimicry which is heightened by the elbowing of the legs downwards, these looking like triangular pieces of cobweb around a notch; an excellent "camouflage". These observations suggest that Lundbeck recorded the resting habit when in a state of coma, whilst Melin observed only the temporary resting periods.

The following species are described from Australia:-

Gonops geniculatus Macquart, 1850.

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Leptogaster

pedanus Walker, 1849. antipodus Bigot, 1878. australis Ricardo, 1912. bancrofti Ricardo, 1912. dissimilis Ricardo, 1912. Leptogaster

vernalis White, 1913. aestiva White, 1913. fumipennis White, 1913. occidentalis White, 1913. autumnalis White, 1916.

Of these eleven names, Walker's and Bigot's species have been placed as synonyms of Macquart's, although Walker's name should have taken priority. In the various collections examined, I can recognize only six distinct species, three of which are apparently undescribed. The most satisfactory method of recognizing the various species is by the shape of the male genitalia, but unfortunately there are few authentic specimens in the Australian collections and only one type. The usually accepted colour characters, upon which most species were founded, are quite inadequate for specific determination but may give a clue to identity, so I sent drawings of the genitalia to Dr. G. A. K. Marshall, Director, Imperial Bureau of Entomology, asking to have these compared with specimens in the British Museum collection, expecting in this way to get satisfactory determinations, and although the drawings were compared, I received word that they did not correspond to any genitalia in the specimens in the British Museum. Further notes indicate that the type of L. pedanus Walker has lost the tip of its abdomen, and there are no males representing L. vernalis White, fumipennis White and autumnalis White.

## Subfamily ASILINAE.

Four papers have already appeared (1920-1926) treating with this subfamily, mainly dealing with the descriptions of species, but in one (1921), an attempt was made to deal with generic conceptions and in another (1926) with genera allied to Cerdistus. In the first preliminary survey the genera were not at all adequately placed and the relationships were inferiorly dealt with. In the meanwhile it has become possible to recognize some very marked lines of division making two groups worthy of at least tribal value.

## Tribe Ommatiini (new tribal name).

Ommatius stands alone, having no apparent relationship with any other genus. The female genital apparatus appears to be more in keeping with the Leptogasterini, being apparently primitive and in no way comparable with the highly developed ovipositor type of the other Asilinae.

There is but one genus in Australia which is represented by a large number of species for which twelve specific names are available. They are all provided with a pectinate arista which enables both sexes to be easily relegated to this tribe, and the males have their genitalia of a characteristic shape.

## Tribe Asilini (new tribal name).

This tribe contains six genera in Australia that are readily grouped into three groups of related genera, and diagnosed in the following key:-

- 1. Interradial crossvein present ...... Promachus
- 2. Eighth and ninth ventral sclerite of abdomen clearly defined in the ovipositor ..... ..... Cerdistus, Neocerdistus Ninth ventral sclerite of the abdomen not discernible in the formation of the ovipositor ...... Neoaratus, Pararatus, Blepharotes

I have recently discovered that a wrong interpretation has been given by me in previous papers concerning the term "lamellae." The position where they occur marks the anus as pointed out by Melin. For the whole structure, when compact, I used the term "lamella" in the singular where the plural should have been used, unconsciously regarding the complete organism as a unit, much in the same way as a segment of the abdomen is singular though composed of two sclerites. Moreover Melin shows the presence of lamellae in *Philonicus*, which character was overlooked by me, the line of division being obliterated on my specimen. Also I have since found them on *Neocerdistus*; they were overlooked till a specimen with the ovipositor buckled was examined in detail, the division between the eighth and ninth dorsal sclerite being clearly defined on this specimen, as also is the division between the lamellae when seen dorsally.

The genera referred to by me (1926) as being allied to the *Cerdistus-Neoitamus* complex may be divided now on the following and better characters:—

It will be noted that *Stilpnogaster* is now eliminated from the *Cerdistus-Neoitamus* complex and so the name is no longer available for subgeneric purposes. *Machimus* is removed from the *Dysmachus* group, the lamellae being shown as free in Melin's illustration; on my specimen it is doubtfully so.

In describing the ovipositor on different species of the Asilinae, Melin wrote (p. 219): "The dorsal part of the ninth abdominal segment, which is often more or less semicircular, is usually drawn out ventral-terminally into a horizontal lamella which bounds the anus beneath. In consequence of this the terminal lamellae, even when they are called free, are more or less wedged into the ninth dorsal segment". This is quite a justifiable criticism but nevertheless there appears to be a considerable amount of movement in the lamellae, the lower plate of which moves in unison with the upper ones and hence must be flexible. This does not appear to be the case with forms referred to as having the lamellae "wedged in".

#### Genus Promachus Loew.

This genus is unique amongst Australian robberflies by having the interradial crossvein forming an apparent continuation of  $R_4$ . This vein runs parallel to the main stem of  $R_{4+5}$  to near where  $R_{2+3}$  branches off. In antennal and general characters it conforms fairly well with other Asilini. The ovipositor is clearly composed of the eighth and ninth abdominal segments, both ventral and dorsal sclerites of each being conspicuous. There is sometimes a tendency to incorporate within the ovipositor the sixth and seventh segments much in the same way as is accomplished with Neoitamus, but in such cases these segments retain the tomentose covering. In a specimen before me of P. laciniosus Becker, from Tunis (Algeria), the eighth segment of the abdomen is covered with hair similar in

quantity and length to that on other segments, but the tomentose covering is absent, nevertheless it has the general appearance of the anterior segments. The ninth ventral sclerite is clearly indicated and at first sight appears to be the only one incorporated in the ovipositor; there are Australian species that approach this form.

## Genus CERDISTUS LOEW.

This genus is a complex under which come species having an ovipositor that is usually very compressed, always with normal free lamellae and the ninth ventral segment clearly defined. Another genus, as yet only represented in Australia by two females from Westwood, Queensland, has the appearance of those belonging to *Cerdistus*, but is without a discernible ninth ventral sclerite, the ovipositor is of moderate length, very compressed.

## CERDISTUS FULVIPUBESCENS Macquart.

? Glaphyropyga australasiae Schiner, Reise Novara Dipt. 1866, p. 187.

Synonymy.—From the description of Glaphyropyga australasiae, there can be little doubt that the species should be placed under the complex Cerdistus, but the German in which the description is written is rather difficult to translate and even with a fresh description made for me by Mr. F. Rose I have been unable to satisfy myself regarding Schiner's meaning in some characters he gives. Miss Ricardo states that the description reads suspiciously like that of Heligmoneura lascus Walker a New Zealand species, but should it prove Australian as recorded then it is likely to be the same as C. fulvipubescens Macquart. I know of no other light coloured species that approximates the description so well.

## Genus Neocerdistus Hardy.

There is a necessity to amend some characters given for this genus the reasons for which are incorporated in the discussion above. The ovipositor is sub-compressed, showing a convex dorsal surface, the ninth dorsal and ventral sclerites are clearly defined in it, the lamellae are somewhat difficult to detect in outline, the two dorsal plates are produced, each into a spinelike process that stand apart from each other; the presence of the ventral plate is problematical. The first median cell (that formed by the branching of  $M_1$  and  $M_2$ ) is strongly constricted subapically. In other respects the genus resembles Cerdistus.

## Genus Neoaratus Ricardo.

Including Asilus of Australian authors.

The Australian forms hitherto placed under the genus Asilus (Hardy, 1920, pp. 250-259) do not belong to it, for the female ovipositor differs fundamentally from that of the typical Asilus; the habits of oviposition are also quite distinct. Melin described and illustrated the ovipositor of Asilus crabroniformis which is a complex of the eighth and ninth dorsal sclerite, the lamellae and the eighth ventral sclerite. In the Australian forms they vary slightly, but the eighth dorsal sclerite may be covered with tomentum and therefore similar in colouration to the rest of the abdomen and in such cases forms a covering from which protrude the ninth dorsal sclerite and lamellae, and the ventral sclerite which is apparently of one piece, more depressed than compressed. From this, which occurs on the typical form there is a tendency to vary towards incorporating the eighth dorsal sclerite which then becomes black and shining but does not alter in shape to any extent and therefore never reaches the form found in Asilus.

Melin described the supposed mode of oviposition by Asilus crabroniformis; the ovipositor inserts the eggs between particles of cattle droppings in which action the short spiny bristles at the apex of the ovipositor are supposed to play a part, but the Australian forms deposit eggs exposed on a drooping leaf, the bristles referred to in Asilus are therefore not required and hence not present; another distinguishing feature.

I observed the oviposition in a garden at Edgecliff, Sydney, where early one morning I found N. inglorius Macleay depositing on a leaf of a shrub. Already one complete orderly row was formed and a second nearly so. There were several gaps in the second row which were being filled, the lamellae operating as a feeler for the purpose. The fly later took a step forward and started a third row this constituting two eggs together, then two further eggs wide apart. Later when I returned four rows were completed and the fly was gone, but the gaps in the third row were filled and in all four rows there were only three or four breaks in the sequence of the eggs, whilst three or four eggs were misplaced. Early one morning exactly a week later the larvae hatched and fell to the ground. I was fortunate enough to see this, having been on the look out morning and evening every day. Miss V. Irwin Smith obtained oviposition in the case of the typical Neoaratus under artificial conditions in a manner that suggests that that species has similar egg-laying habits.

#### Genus Pararatus Ricardo.

The female ovipositor is well developed and without a ninth ventral sclerite, but ventrally, at the apex which tapers to a point, there are a pair of flanges strongly developed. Where such flanges occur on species of other genera they are small and mainly hidden. The lamellae, composed of three flat plates, are distinctly defined and not at all compact as on Asilus, Neoaratus and Cerdistus. Only one species is known, P. macrostylus Loew, recorded from Western Australia, Queensland and Victoria.

#### Genus Blepharotes Westwood.

This genus is readily recognized by the broad depressed abdomen containing conspicuous tufts at the sides. In the ovipositor the ninth dorsal segment is clearly defined as also the three plates of the lamellae but ventrally only one segment is defined, this seen laterally, is broadly rounded at the apex.

Under this genus the male genitalia of four species were illustrated in outline (Hardy, 1921, p. 296), two being described as new. The figures were correctly given in the text but the names were transposed under the explanation to the figures. Text-fig. 9 is B. brisbanensis, since found to be a synonym of B. flavus Ricardo (Hardy, 1923, p. 176); Text-fig. 10 is B. punctatus Hardy; Text-fig. 11 which was left unnamed is the common form found around Sydney to which I now apply the name B. corarius Wiedemann. Text-fig. 12 is a rare undescribed form of which I have seen only the male. The readily recognized B. abdominalis is in nearly every collection. B. vivax Hermann is represented by two females only and there are no further species in any collection examined. The females are best allied to the males by noting the proportional length of the antennal segments as these coincide in the sexes, no two species having the same proportions. With regard to colour both light and dark yellow abdomens occur in three of the described forms and colour therefore has no significance for identification purposes.

## Tribe Phellini.

The tribe *Phellini* contains but two genera *Phellus* and *Psilozona*, both of which require a more intensive study. The female of a new species from Chinchilla, Queensland, is in such excellent condition that all the genital parts are readily recognized and conform in type to no other ovipositor I have seen in the Dasypogoninae; very distinctly does it show the absence of genital spines such as found on the *Saropogonini*. This new form, red and black in colouration is an undoubted *Phellus* of which previously I had studied only old specimens; presumably the spines discovered on them will ultimately prove to be but modified hairs that have no relation to the spines of *Saropogonini*.

On *Phellus* the moustache is very thick and depressed, the hairs all pointing more or less towards the apex of the proboscis, whilst on *Psilozona* they conform to the more usual types, the hairs being upstanding, issuing more or less at right angles to the face. On *P. glaucus* and *P. piliferus* the moustache is overlaid with a quantity of flattened out scales that arise from the face, expand in width, then become ribbon-like and finally taper to a point. These specialized hairs are not found on the specimen from Chinchilla nor yet does the apical prolongation on the intermediate tibiae occur on that form.

## Tribe Laphrini (new tribal name).

This tribe is constituted by that part of the old subfamily Laphrinae which has three antennal segments with or without a hair-like spine but when present it is placed dorsally as in many Brachyrrhopalini. It is further distinguished by the veins  $R_1$  and  $R_{2+3}$  amalgamating before reaching the wing border and by the veins  $M_3$  and  $M_4$  doing likewise. Even when so limited the tribe is complex.

Six genera are placed here, namely: Nusa, Atomasia, Adelodus, Cyanonedys, Laphria and Maria all of which are recognized in the various collections except the last. Aphesia has been used for one species which Hermann suggests is an Adelodus.

## Tribe Brachyrrhopalini.

This tribe has already been satisfactorily diagnosed and four genera defined in key form (Hardy, 1926, p. 307). In none of the species do any of the radial or the median veins meet each other before reaching the wing margin, but occasionally  $M_1$  runs into  $R_5$ . Most of the species are recognized and suitably labelled in collections and the status of each species is fairly well assured. The following is a complete list with synonyms:—

Brachyrrhopala Macquart, 1847 (Cabasa Walker, 1850). \*pulchella Macquart, 1846 (Dasypogon). venno Walker, 1849 (Dasypogon). rufithorax Walker, 1850 (Cabasa). rubrithorax Macquart, 1850 (Dasypogon). \*ruficornis Macquart, 1847. fenestrata Macquart, 1850 (Codula). victoriae Roder, 1892. maculata Roder, 1885. fulva Ricardo, 1912. ? quadricincta Bigot, 1878 (Codula). Codula Macquart, 1850. \*limbipennis Macquart, 1850. ? vespiformis Thomson, 1868. Chrysopogon Roder, 1881. \*albopunctata Macquart, 1846 (Dasypogon). spintha Walker, 1849 (Dasypogon).

\*crabroniformis Roder, 1881.
\*mulleri Roder, 1881.
fasciatus Ricardo, 1912.
punctatus Ricardo, 1912.
queenslandi Ricardo, 1912.
\*splendissimus Ricardo, 1912.
\*rufulus White, 1913.
\*nigriscens White, 1913.
pallidipennis White, 1917.
rubripennis White, 1917.
Opseostlengis White, 1913.
\*insignis White, 1913.

Note.—Species bearing the names here given with an asterisk may be regarded as correctly named in collections; doubt may be raised concerning some of the others.

## Tribe Saropogonini.

To this tribe now come all forms of the Australian Asilidae that are provided with strong curved spines in the genital complex of the female, four or five segments in the antennae, the last of which consists of a minute spine inserted in a cavity at the apex of the penultimate segment. Two genera, Clinopogon and Bathypogon are exceptions in so far as the last antennal segment is of considerable size, being more segment-like and not a hair-like spine. It will be noted that those species hitherto described fall into two groups on characters that appear to be suitable for key purposes; those with the tibial spur on the anterior legs and those without, the latter a complex, the former being again divisible on the shape of the abdomen though all the forms are apparently closely related.

For convenience the first group is divided in the key on the presence or absence of the scutellar bristles as this works well, and it leaves only the genus Saropogon in an anomalous position. A more natural grouping of the genera would be accomplished by separating those forms with a tapering abdomen or allied thereto from those with a clubbed abdomen or related thereto, but these forms meet towards having the abdomen somewhat cylindrical and it is not always easy to determine to which category a specimen should be aligned. Apparently all the described forms with the tapering abdomen or related thereto have scutellar bristles, only one undescribed form is without them, whilst all those with clubbed abdomen or related thereto are without bristles except Saropogon.

The isolation of genera hitherto proposed and which are grouped in the key given below is offering considerable difficulty as many of them are joined by related but undescribed species. Even *Thereutria* and *Metalaphria* cannot be isolated satisfactorily for there are two species as yet undescribed that are like each other in every respect except the veins  $R_1$  and  $R_{2+3}$  are separate in one from South Australia and run together in the other from Queensland, thus joining the *Thereutria* type of wing to the *Rachiopogon* type.

## Key to the genera of the Saropogonini.

4. Wings without an interradial crossvein Stenopogon, Neodioctria
Wings with an interradial crossvein
5. The veins M, and M, running to the wing border independently Clinopogon
The yeins M, and M, meeting considerably before reaching the wing border
Bathypogon
Those species that fall into couplet "2" of the key given above may be placed
in their correct genera in many cases by aid of the following temporary key, but
some species which presumably are undescribed and cannot be made to conform
to the genera of this key are at present regarded as belonging to new genera:—
to the general transfer of the property of the
Key to the genera of the Saropogonini that have a tibial spur.
1. Abdomen strongly tapering; scutellum almost invariably provided with bristles 2
Abdomen clubformed, at most cylindrical, never tapering, rarely with scutellar
bristles 5
2. Veins R <sub>1</sub> and R <sub>2+3</sub> meeting before the wing margin
Veins $R_1$ and $R_{2+3}$ running independently to the wing margin
Moustache confined to the oral margin
4. Antennae with three segments and a minute spine; moustache confined to the oral
margin, face bare
Antennae with four segments and a minute spine; long soft hairs on face above
moustache

## Genus Thereutria Loew.

Face above moustache with slight soft hairs ..... Erethropogon

5. Scutellum with bristles; antennae with four segments and a minute spine ........ ..... Saropogon Scutellum without bristles ...... 6 6. Vein M<sub>3</sub> meeting M<sub>4</sub> before reaching the wing border ...... Deromyia 7. Antennae with three segments and a minute spine. Face prominent, bare, moustache 

Three common species are recognized in collections and in all of them the moustache differs in colour according to sex; all have white lateral spots usually discernible from the second to sixth abdominal segments. T. amaricus Walker, a common Sydney form that extends into Queensland, has the basal half of the tibiae yellow. T. pulchripes White, which is plentiful in the Blue Mountains, New South Wales, has the basal half of both femora and tibiae brown, which gives the insect the superficial appearance of a common Laphria. T. pulchra Schiner has the tubercle and moustache smaller than those of the other two and the legs are entirely black but white hairs are abundant on the posterior side of the intermediate and posterior tibiae; it is abundant around Brisbane. The outstanding name placed here, T. luctuosa Macquart, may possibly belong to T. pulchra Schiner.

## Genus METALAPHRIA Ricardo.

This genus differs from Thereutria only by having the moustache reduced to a row of bristles along the oral margin. A rare Brisbane species is certainly congeneric with M. australis Ricardo and may be identical with it. Although M. aurifacies White agrees in generic characters it seems to be related more to Thereutria than here. White's species is not uncommon around Sydney during November and December. There is a black species from Chinchilla which has the abdominal spots of a Thereutria, the moustache of Metalaphria and the wing venation of Rachiopogon and Questopogon and it is certainly a connecting link.

#### Genus ----?

## Neosaropogon Ricardo in part.

Attention has already been drawn to the fact that *Neosaropogon* Ricardo, was a composite genus when established and of those species originally placed under the name only *N. princeps* could be retained there. The other species have not yet been allied to any genus. *D. salinator* Walker, *N. claripennis* Ricardo, *N. nigrinus* Ricardo and *N. froggatti* Dakin and Fordham are all described as having the tibial spur present and with bristles on the scutellum and hence must belong to the *Rachiopogon-Questopogon* group. At least two of these forms are provided with tapering abdomens that are unusually long, resembling in this respect the genus *Neoaratus*, one of the *Asilini*.

A pair of *N. froggatti* agrees remarkably well with the description and conforms to this unnamed genus; the male has quite normally shaped genitalia with no outstanding features as seems to have been expected by Dakin and Fordham (1922). *N. claripennis* is congeneric, *N. nigrinus* has not been recognized and *N. salinator* is represented by two species so named in Australian collections, one certainly congeneric, the other doubtfully so.

## Genus Saropogon Loew.

Saropogon semirufus Bigot has been recognized and there are two other species, apparently undescribed, that come here. Saropogon (Dasypogon) suavis Walker is applied to specimens in Australian collections to a small species of Neosaropogon, Miss Ricardo having labelled one as doubtfully this. Brachyrrhopala bella White was removed to this genus tentatively by me; I have not been able to check its characters since. Saropogon rubescens White, the type of which I have before me, belongs to the Rachiopogon-Questopogon group; it is small in size, but the abdomen tapers strongly. I also suspect that S. dissimulans White does not belong to this genus, but I have not recognized it.

Typically the genus contains species that have a slightly clubbed abdomen and scutellar spines and is related to the *Neosaropogon* group rather closely.

## Genus Neosaropogon Ricardo.

There are now three species described that are recognized as belonging to this genus, *Dasypogon princeps* Macquart, *D. nitidus* Macquart and *D. suavis* Walker, but there are quite a number of species in collections that must be placed here.

#### Genus Deromyia Philippi.

In Australia this genus appears to be confined to the higher mountains and the relationship is undoubtedly with Neosaropogon from which it differs by the veins  $M_3$  and  $M_4$  uniting before reaching the wing border.

#### Genus Neocyrtopogon Ricardo.

I have recently seen the typical form of this genus from Westwood, Queensland, and find it conforms in every respect to the generic characters previously given by me, though based upon other species. The whole head is very inflated, the excavation between the eyes being eliminated; the moustache is confined to the oral margin and is remarkably reduced in regard to the size of the bristles. It is further distinguished from Neosaropogon by the entire absence of the fourth antennal segment. Other species that have been placed by me in this genus are

less developed with regard to the head characters, but agree in antennal structure and therefore cannot be confused with other genera of the *Neosaropogon* group. The typical form may be mistaken for a Therevid on structural grounds but it is, nevertheless, a member of the *Saropogonini*.

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